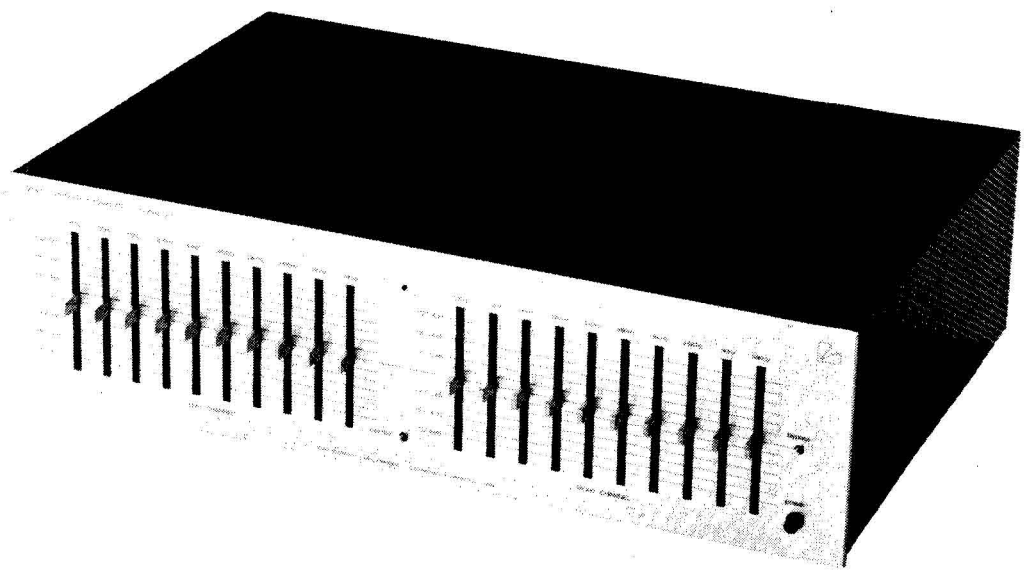
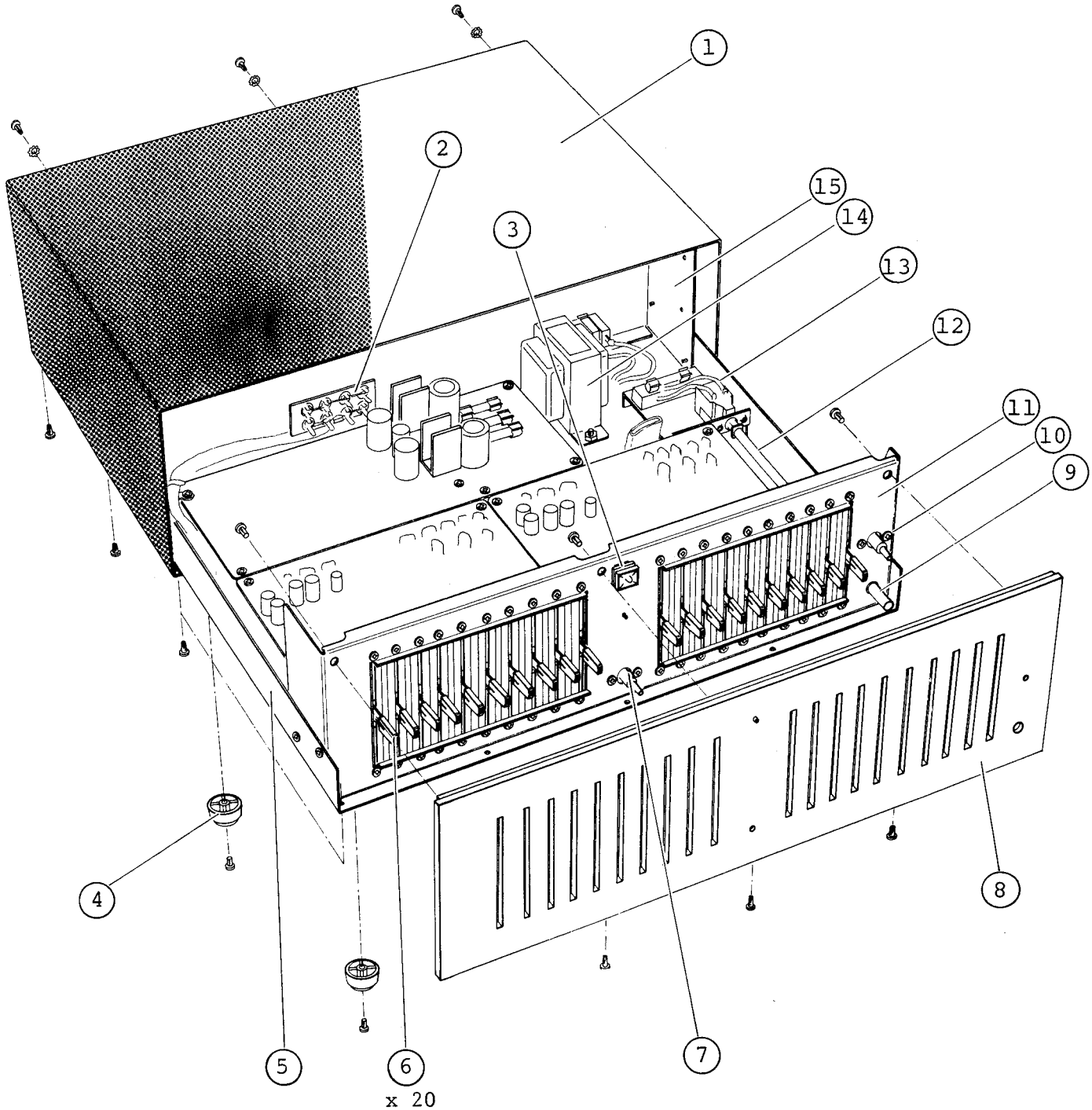
SERVICE MANUAL

SOLID STATE GRAPHIC FREQUENCY EQUALIZER G-11



EXPLODED VIEW



Replacement Parts List

Remarks

Capacitors: C.....Ceramic, E.....Electrolytic, MY....Mylar, G.....G Capacitor
S.....Styrol, T.....Tantalum, MI....Mica, MP....MP Capacitor
O.....Oil capacitor, TRIM.....Trimmer capacitor, AC....AC Capacitor

Resistors: ±10%, ±5%, 1/4W, unless specified otherwise

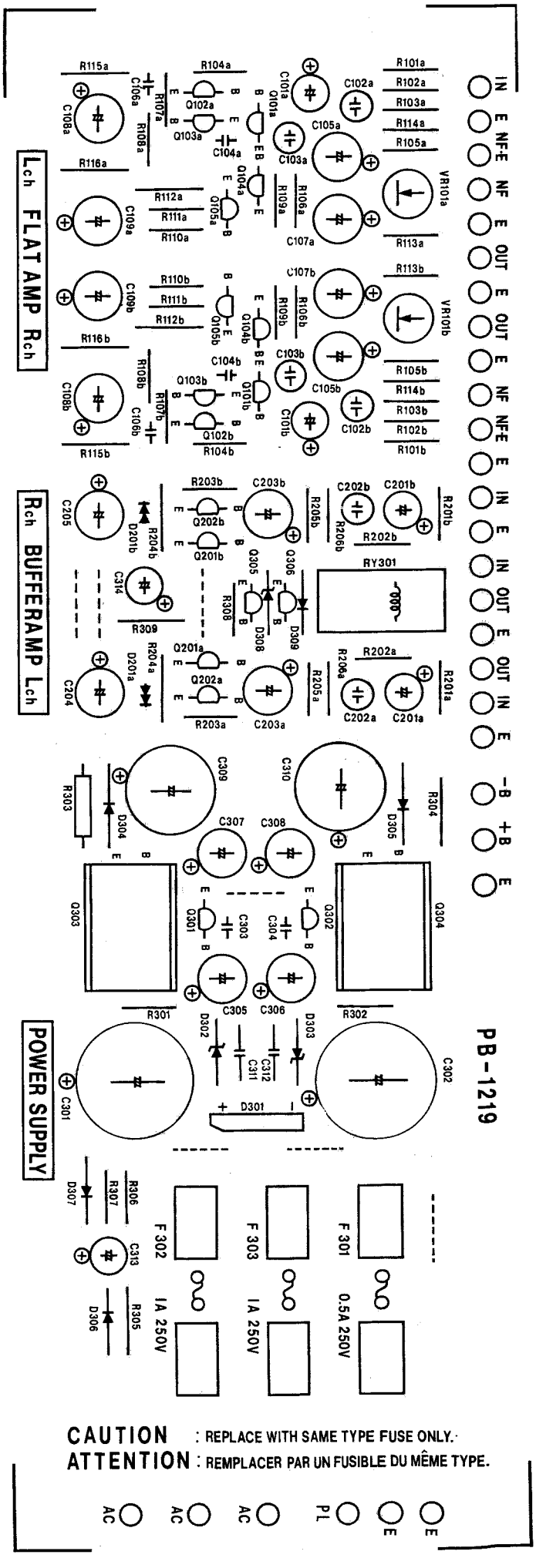
Type: (S).....Model for north European countries (E).....Standard model
(U).....Model for U.S.A. and CANADA (J).....Model for JAPAN

PB-1219 (No. 0 ∿ No. 500 set)

SYMBOL NO.	STOCK NO.	DESCRIPTION		
R101ab	RB0190	2.2K	K-25	
102ab	RB0246	470K	"	
103ab	RB0244	390K	"	
104ab	RB0206	10K	R-25	
105ab	RB0246	470K	"	
106ab	RB0206	10K	R-25	
107ab	RB0190	2.2K	"	
108ab	RB0210	15K	"	
109ab	RB0190	2.2K	"	
110ab	RB0214	22K	"	
111ab	RB0184	1.2K	"	
112ab	RS0066	100	F1/4W	
113ab	RB0198	4.7K	R-25	
114ab	RB0168	270	"	
115ab	RS0069	220	F1/4W	
116ab	"	"	"	
R201ab	RB0246	470K	R-25	
202ab	RB0180	820	"	
203ab	RB0214	22K	"	
204ab	RS0079	120	F1/4W	
205ab	RB0174	470	R-25	
206ab	RB0238	220K	"	
R301	RB0202	3.3K	R-25	
302	"	"	"	
303	RS2714	47	F1W	
304	RS2501	10	F1/2W	
305	RS1086	1.5K	F1/4W	
306	RB0194	3.3K	R-25	
307	RB0258	1.5M	R-25	
308	RB0204	8.2K	"	
309	RS2515	180	F1/2W	
VR101ab	RT0063	22K-B	trimmer	
C101ab	CE5024	2.2μF	50V	E
102ab	CQ0267	100pF		S
104ab	CC0081	1.5pF		C
105ab	CE0078	100μF	16V	E
106ab	CQ0016	0.01μF		My
107ab	CE5028	10μF	50V	E
108ab	CE0094	47μF	35V	E
109ab	"	"	"	"
C201ab	CE5019	1μF	50V	E
202ab	CM0060	47pF		Mi
203ab	CE5026	4.7μF	50V	E
204	CE0094	47μF	35V	E
205	"	"	"	E

SYMBOL NO.	STOCK NO.	DESCRIPTION		
C301	CE2080	1000μF	50V	E
302	"	"	"	E
C303	CC0005	33pF		C
304	"	"		"
305	CE0095	100μF	35V	E
306	"	"	"	E
307	CE0095	100μF	35V	E
308	"	"	"	E
309	CE1064	47μF	35V	E
310	"	"	"	"
311	CK0203	0.01μF		C
312	"	"		C
313	CE0151	4.7μF	50V	E
314	"	"	"	E
D201	TV0005	VD-1221 varistor		
301	TD0142	S1VB20 bridge		
302	TD0029	WZ-290 zener		
303	"	"	"	
304	TD0003	1N4003		
305	"	"		
306	"	"		
307	TD0116	1S2075		
308	TD0023	WZ-071 zener		
309	TD0003	1N4003		
Q101ab	TR0025	2SC1345 (E)		
102ab	TR0125	2SA836 (E)		
103ab	"	"		
104ab	TR0025	2SC1345 (E)		
105ab	TR0025	2SC1345 (E)		
Q201ab	TR0025	2SC1345 (E)		
202ab	"	"		
Q301	TR0025	2SC1345 (E)		
302	TR0125	2SA836 (E)		
303	TR0121	2SC1626 (Y)		
304	TR0122	2SA816 (Y)		
305	TR0025	2SC1345 (E)		
306	"	"		
F301	BF0074	Fuse	0.5A	(U)
	BF0111	"	0.5A	(E)
	BF0202	"	0.2A	(T)(S)
302	BF0074	Fuse	0.5A	(U)
	BF0113	"	1A	(E)
	BF0206	"	0.5A	(T)(S)
303	BF0075	"	1A	(U)
	BF0206	"	0.5A	(T)(S)

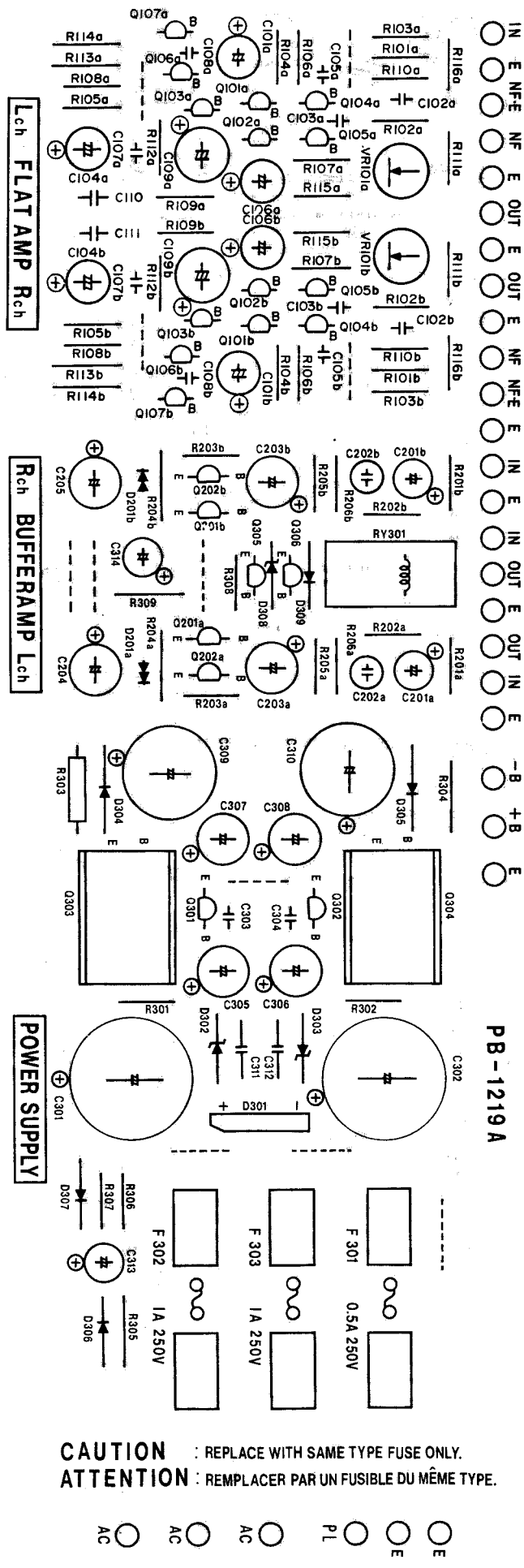
SYMBOL NO.	STOCK NO.	DESCRIPTION
RY301	AY0047	Relay BR221D
	4H0003 4H0004	Fuse Holder(E)(U) Fuse Holder (S)
	BE1054	Heat Sink


Lch FLAT AMP Rch
Rch BUFFERAMP Lch
POWER SUPPLY
PB-1219
IN E NF E NF E OUT E OUT E NF E NF E IN E IN E OUT E OUT E IN E -B +B E
AC AC AC PL E E
F 302 1A 250V
F 303 1A 250V
F 301 0.5A 250V
CAUTION : REPLACE WITH SAME TYPE FUSE ONLY.
ATTENTION : REMPLACER PAR UN FUSIBLE DU MÊME TYPE.

PB-1219A (No. 501 set ∿)

SYMBOL NO.	STOCK NO.	DESCRIPTION
R101ab	RB0182	1K R-25
102ab	RB0244	390K "
103ab	RB0246	470K "
104ab	RB0174	470 "
105ab	RB0184	1.2K "
106ab	RB0166	220 "
107ab	"	" "
108ab	RB0180	820 "
109ab	RB0210	15K "
110ab	RB0184	1.2K "
111ab	RB0246	470K "
112ab	RB0206	10K "
113ab	RS0079	120 F1/4W
114ab	"	" "
115ab	RB0198	4.7K R-25
116ab	RB0168	270 "
R201ab	RB0246	470K R-25
202ab	RB0180	820 "
203ab	RB0214	22K "
204ab	RS0079	120 F1/4W
205ab	RB0174	470 R-25
206ab	RB0238	220K "
R301	RB0202	6.8K R-25
302	"	" "
303	RS2714	47 F1W
304	RS2501	10 F1/2
305	RS1086	1.5K F1/4W
R306	RB0194	3.3K R-25
307	RB0258	1.5M "
308	RB0204	8.2K "
309	RS2515	180 F1/2W
VR101ab	RT0095	22K-B trimmer
C101ab	CE5024	2.2μF 50V E
103ab	CQ0015	0.012μF My
104ab	CE0076	33μF 16V E
105ab	CQ0020	3900pF My
106ab	CE0069	100μF 10V E
107ab	CM0068	100pF Mi
108ab	CC0033	10pF C
109ab	CE5028	10μF 50V E
	CE5019	1μF 50V E
110	CK0140	0.047μF C
111	"	" C
112ab	CQ0608	0.68μF (add.) F
C201ab	CE5019	1μF 50V E
203ab	CE5026	4.7μF 50V E
204	CE0094	47μF 35V E
205	"	" " E
C301	CE2080	1000μF 50V E
302	"	" " E
303	CC0005	33pF C
304	CC0005	33pF C

SYMBOL NO.	STOCK NO.	DESCRIPTION
305	CE0095	100μF 35V E
306	"	" " "
307	"	" " "
308	"	" " "
309	CE1064	470μF 35V E
310	"	" " "
311	CK0203	0.01μF C
312	"	" "
313	CE0151	4.7μF 50V E
314	CE0151	" " "
D301	TD0139	SIVB20 bridge
302	TD0029	WZ-290 zener
303	"	" "
304	TD0003	1N4003
305	"	"
306	"	"
307	TD0116	1S2075
308	TD0023	WZ-071 zener
309	TD0003	1N4003
D201ab	TV0005	VD-1221 varistor
Q101ab	TR0125	2SA836 (E)
102ab	"	"
103ab	"	"
104ab	TR0025	2SC1345 (E)
105ab	"	"
Q106ab	TR0125	2SA836 (E)
107ab	TR0025	2SC1345 (E)
Q201ab	TR0025	2SC1345 (E)
202ab	"	"
Q301	TR0025	2SC1345 (E)
302	TR0125	2SA836 (E)
303	TR0121	2SC1626 (Y)
304	TR0122	2SA816 (Y)
305	TR0025	2SC1345 (E)
306	"	"
F301	QF0074	Fuse 0.5A (U)
	BF0111	" 0.5A (E)
	BF0202	" 0.2A(T)(S)
302	BF0075	" 1A (U)
	BF0113	" 1A (E)
	BF0206	" 0.5A(T)(S)
303	BF0075	" 1A (U)
	BF0113	" 1A (E)
	BF0206	" 0.5A(T)(S)
	AH0003	Fuse Holder(E)(U)
	AH0004	" " (S)
RY301	AY0047	Relay BR221D024
	BE1054	Heat Sink



CAUTION : REPLACE WITH SAME TYPE FUSE ONLY.
ATTENTION : REMPLACER PAR UN FUSIBLE DU MÊME TYPE.

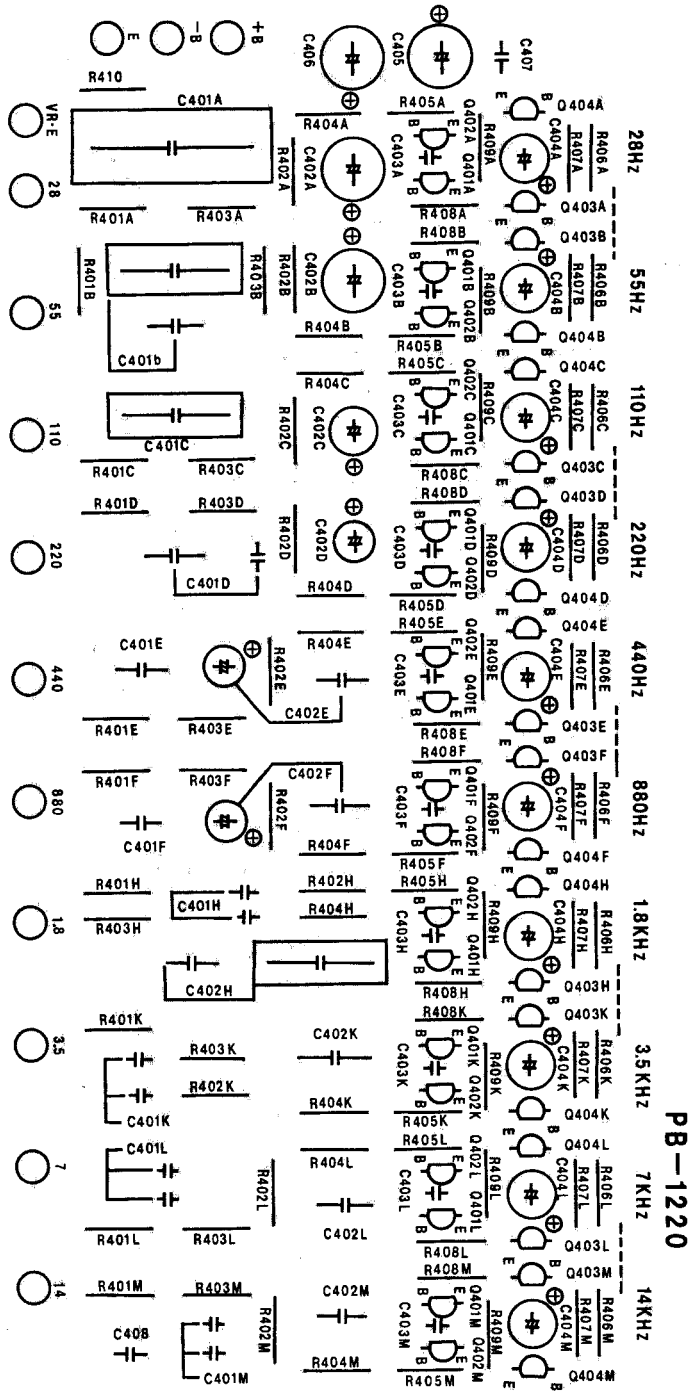
PB-1220

A: 28Hz B: 55Hz C: 110Hz D: 220Hz E: 440Hz

F: 880Hz H: 1.8kHz K; 3.5kHz L: 7kHz M: 14kHz

SYMBOL NO.	STOCK NO.	DESCRIPTION	
R401A	RB0158	100	R-25
B	RB0154	68	"
C	"	"	"
D	RB0158	100	"
E	RB0134	10	"
F	"	"	"
H	RB0154	68	"
K	"	"	"
L	"	"	"
M	"	"	"
402A	RB0178	680	"
B	"	"	"
C	"	"	"
D	"	"	"
E	RB0179	750	"
F	"	"	"
H	"	"	"
K	"	"	"
L	"	"	"
M	"	"	"
403A	RB0178	680	"
B	"	"	"
C	"	"	"
D	"	"	"
E	RB0179	750	"
F	"	"	"
H	"	"	"
K	"	"	"
L	"	"	"
R403M	RB0179	"	"
404A	RB0182	1K	"
∫	∫	∫	∫
404M	"	"	"
405A	RB0206	10K	"
∫	∫	∫	∫
405M	"	"	"
406A	RB0214	22K	"
∫	∫	∫	∫
406M	"	"	"
407A	RB0188	1.8K	"
∫	∫	∫	∫
407M	"	"	"
408A	RS1102	33	
∫	∫		
408M	"	"	"
409A	"	"	"
∫	∫		
409M	"	"	"
C401A	CQ0605	2.2μF	F
B	CQ0608	0.68μF	F
B	CQ0004	0.15μF	My
C	CQ0609	0.47μF	F

SYMBOL NO.	STOCK NO.	DESCRIPTION	
D	CQ0157	0.018μF	My
D	CQ0003	0.22μF	"
E	CQ0005	0.1μF	"
F	CQ0009	0.047μF	"
H	CQ0013	0.022μF	"
H	CQ0023	2200pF	"
K	CQ0015	0.012μF	"
K	CQ0024	1500pF	"
L	CQ0019	0.0047μF	My
L	CQ0024	1500pF	"
M	CQ0023	0.0022μF	"
M	CQ0025	1200pF	"
402A	CE0602	33μF 16V	E
B	CE0601	22μF 16V	E
C	CE0600	10μF 16V	E
D	CE0605	4.7μF 25V	E
E	CE0608	2.2μF 50V	E
E	CQ0178	0.12μF	My
F	CE0607	1μF 50V	E
F	CQ0003	0.22μF	My
H	CQ0005	0.1μF	My
	CQ0609	0.47μF	F
K	CQ0370	0.27μF	"
L	CQ0004	0.15μF	My
M	CQ0007	0.068μF	My
C403A	CC0079	6pF	C
∫	∫	∫	∫
403M	"	"	"
C404A	CE0151	47μF 50V	E
∫	∫	∫	∫
404M	"	" "	"
405ab	CE0094	47μF 35V	E
406ab	"	" "	"
407ab	CK0155	0.01μF	C
408ab	CK0140	0.047μF	C
Q401A	TR0125	2SA836 (E)	
∫	∫	∫	
401M	"	"	
402A	TR0025	2SC1345	
∫	∫	∫	
402M	"	"	
403A	"	"	
∫	∫	∫	
403M	"	"	
404A	TR0125	2SA836	
∫	∫	∫	
404M	"	"	


PB-1220
28Hz
55Hz
110Hz
220Hz
440Hz
880Hz
1.8KHz
3.5KHz
7KHz
14KHz
VR-E
28
55
110
220
440
880
1.8
3.5
7
14
+B
-B
E
C401A
C401b
C401C
C401D
C401E
C401F
C401H
C402H
C401K
C401L
C401M
C408
C402K
C402L
C402M
R410
R401A
R401B
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R401D
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R402M
R403A
R403B
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R408E
R408F
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R408L
R408M
R409A
R409B
R409C
R409D
R409E
R409F
R409H
R409K
R409L
R409M
Q402A Q401A
Q401B Q402B
Q402C Q401C
Q401D Q402D
Q402E Q401E
Q401F Q402F
Q402H Q401H
Q401K Q402K
Q402L Q401L
Q401M Q402M
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C404B
C404C
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C404L
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R406E
R406F
R406H
R406K
R406L
R406M
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R407D
R407E
R407F
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R407L
R407M
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Q403A
Q403B
Q404B
Q404C
Q403C
Q403D
Q404D
Q404E
Q403E
Q403F
Q404F
Q404H
Q403H
Q403K
Q404K
Q404L
Q403L
Q403M
Q404M

REAR PANEL

SYMBOL NO.	STOCK NO.	DESCRIPTION
	AC0010	AC Socket (E)(U)
	AG0063	GND Terminal
	AT0099	6P Jack
R501	RB0236	180K R-25
502	"	" "
503	RB0238	220K "
504	"	" "
	UC1102	Rear Panel (E)(U)
	UC1103	" " (S)

SUB PANEL

SYMBOL NO.	STOCK NO.	DESCRIPTION
	AG0031	Lug Terminal 1L2P
	AL0041	Lamp 12V-75mA
R505	RB0184	1.2K R-25
506	"	" "
507	RB0210	15K "
508	"	" "
509	RB0184	1.2K "
510	"	" "
VR501 ~ VR520	RV0070	Slide VR 200K
S501	SP0012	Push Sw.
502	SP0011	" "
	UB1046	Sub Panel
	WZ0002	Indicator Lamp Holder

CHASSIS UNIT

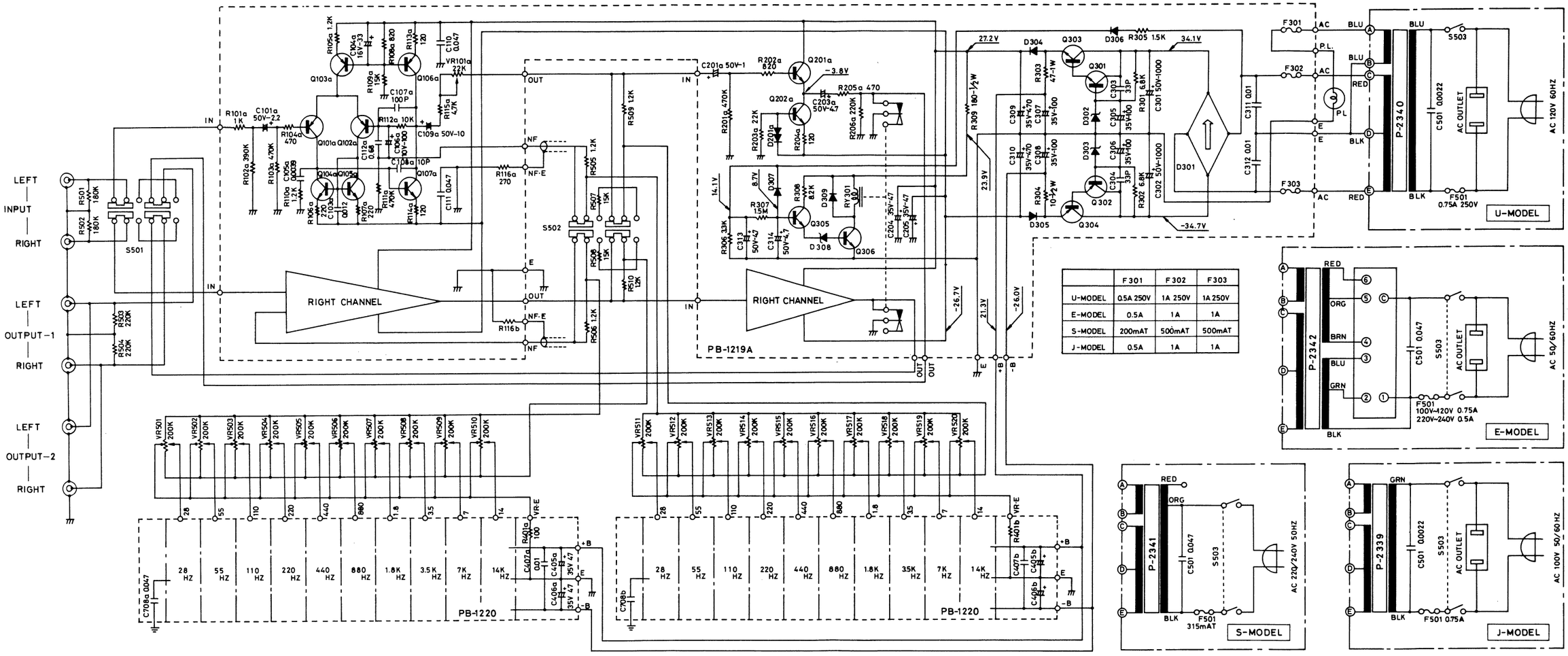
SYMBOL NO.	STOCK NO.	DESCRIPTION
	AC0013	AC Select Socket
	AC0014	AC Select Plug
	AH0016	1P Fuse Holder(E)(U)
	AH0019	Fuse Holder (S)
	AT0049	4P Terminal
F501	BF0005	Fuse 0.75A (U)
"	BF0111	" 0.5A (EK)
"	BF0112	" 0.75A (EZ)
F501	BF0204	" 0.315A(T)(S)
	BU0076	Capacitor Cover(U)
C501	CU0010	AC Capacitor 0.047μF(E)(S)
	CU0051	
	PT2340	Power Trans (U)
	PT2341	" " (S)
	PT2342	" " (E)
S503	SP0032	Power Switch(U)
"	SP0090	" " 5A(E)(S)
	UA1053	Chassis (S)(U)
	UA1054	" (E)
	UZ1166	Extension Shaft
	WN0007	Leg
	BK0018	AC Cord (EZ)
	BK0018	" " (UC)(UZ)
	BK0022	" " (EK)(SK)
	BK0023	" " (SG)
	BK0027	" " (UW)
	BK0036	" " (SB)

SYMBOL NO.	STOCK NO.	DESCRIPTION
	UE1098	Bottom Plate
	UG1012	Bonnet
	WA1139	Front Panel
	WG0007	Pilot Acryl
	WJ1089	Mould Knol(Power)
	WJ1111	Mould 20 pcs.
	WK1097	Metal Knob 2 pcs.
	BK0046	Pin Plug Cord

SPECIFICATIONS

Output Voltage:	typically 1V, max. 6V (at flat position)
Output Impedance:	500 ohms
T.H.D.:	no more than 0.005% (output 1V, 20Hz – 20,000Hz, flat)
I.M.D.:	no more than 0.005% (output 1V, 60Hz: 7kHz = 4 : 1, flat)
Input Sensitivity:	1V
Input Impedance:	100k ohms
Frequency Response:	10Hz – 100,000Hz (within –1dB, at flat position)
Gain:	0dB (within ±0.5dB, at flat position)
S/N Ratio:	better than 115dB (at flat position, IHF-A weighted, input short-circuited) better than 95dB (at flat position, RMS, input short-circuited)
Equalizer Center Frequency:	28Hz, 55Hz, 110Hz, 220Hz, 440Hz, 880Hz, 1.8kHz, 3.5kHz, 7kHz, 14kHz.
Maximum Variable Amount:	±12dB & ±6dB (selectable)
Bandwidth:	Q ≒ 2.3
Channel Separation:	better than –80dB (1kHz)
Residual Noise:	below 0.018mV (at flat position)
Additional Features:	Range Selector Switch, Bypass Switch, Extra AC Outlet (unswitched, 300W)
Power Consumption:	23 W
Dimensions:	438(W) x 314(D) x 126(H) mm (17-1/4" x 12-3/8" x 4-15/16") (including legs, front & rear protrusions)
Weight:	Net 5.9 kgs (12.9 lbs.) Gross 7.3 kgs (16.1 lbs.)

Specifications and appearance design subject to change without notice.



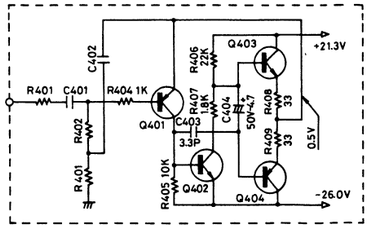
	F301	F302	F303
U-MODEL	0.5A 250V	1A 250V	1A 250V
E-MODEL	0.5A	1A	1A
S-MODEL	200mAT	500mAT	500mAT
J-MODEL	0.5A	1A	1A

Q104 Q105 Q107 Q201 Q202 } ----2SC1345
Q301 Q305 Q306 Q402 Q403 }
Q101 Q102 Q105 Q106 Q302 } ----2SA836
Q401 Q404

D201----------VD1221
D301----------SIVB20
D302 D303----------WZ-290
D304 D305 D306 D309-------IN4003
D307----------IS2075
D308----------WZ-071

S501----------by pass
S502----------range selector
S503----------power

VR501~VR520----level control



f (Hz)	R401(Ω)	R402(Ω)	R403(Ω)	C401 (μF)	C402 (μF)
28	100	680	680	2.2	33
55	68	680	680	0.68+0.15	22
110	68	680	680	0.47	10
220	100	680	680	0.22+0.018	4.7
440	10	750	750	0.1	2.2 +0.12
880	10	750	750	0.047	1 +0.22
1.8K	68	750	750	0.022+0.0022	0.47+0.1
3.5K	68	750	750	0.012+0.0015	0.27
7K	68	750	750	0.0047+0.0015	0.15
14K	68	750	750	0.0022+0.0012	0.068

1. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE IN OHM 1/4 WATT, ALL CAPACITORS ARE IN MICRO FARAD.
2. TRANSISTORS AND DIODES MAY BE REPLACED WITH ANY TYPE HAVING COMPARABLE RATINGS.
3. DUE TO CONTINUED IMPROVEMENTS LUX RESERVE THE RIGHT TO ALTER THE CIRCUIT OR SPECIFICATION.

G-11